

# ***US Central Command Technology Development***



# ***CENTCOM - Area of Responsibility***

## **Complex**

- 20 Countries, 4.5 million square miles
- 1.1 Million square miles of ocean
- 531 Million people, 16 major ethnic groups
- 7 Major languages, hundreds of dialects
- 4 Major religions



## **Global Economic Impact**

- Arabian Gulf produces ~ 31% of world crude oil
- Region exports ~ 26% of global LNG supply
- 3 x Strategic Choke Points
  - Appx 40% internationally traded oil transits SoH
  - 21% of LNG goes through Strait of Hormuz

# ***Vision & Objectives***

CENTCOM vision for the AOR is a region where ***improved security*** leads to ***greater stability*** and where ***regional cooperation*** helps to ***isolate and counter*** those who would use violence in pursuit of their goals . . . .

In pursuit of our vision we will:

- Expand stability, self-governance, development and security in Iraq
- Set conditions for security and strengthen governance in Afghanistan
- Degrade violent extremist networks, operations, and sanctuaries;  
with defeating al-Qaeda the priority
- Counter the proliferation of WMD
- Strengthen relationships and influence organizations and states to  
contribute to regional stability and the free flow of commerce
- Posture the force to build and sustain joint and combined warfighter  
capabilities and readiness

# ***What keeps the Boss awake at night . . .***

**The enemy we don't know**

**&**

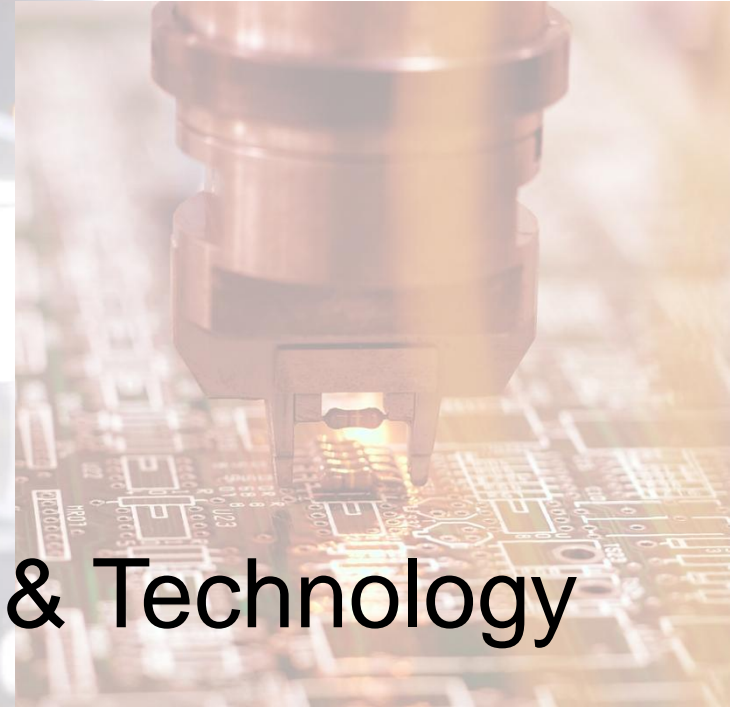
**Has the ability to keep us at arms length**

**In a nutshell . . .**

**Anti-access / Area Denial & Indications & Warning are our biggest challenges as we end OEF, withdraw boots on the ground, and become more maritime focused.**



# The Role of Science & Technology



# ***Charter***

Conduct ***discovery, research, analysis***, and ***sponsor development*** of new and emerging technologies and techniques which have the ***potential to provide solutions*** to Headquarters and Component validated Joint needs.

***Review*** USCENTCOM and Component ***plans, operations***, programs, policies and activities for areas where technology will improve efficiency and effectiveness.

***Integrate*** across USCENTCOM headquarters and Component staffs for transformational, integrating, and experimentation activities.

# ***What we do***

- **Technology discovery, research & analysis, and inform the staff & OSD on promising initiatives**
  - **Attend technology symposiums / reviews**
    - **Service Labs, DARPA, FFRDCs**
    - **Private industry & Academia**
  - **Conduct global market research**
  - **Provide initial feasibility / technical merit on proposals**
- **Needs pull**
  - **Conduct HQ USCENTCOM Leadership, Directorate, & Component outreach**
  - **Participate in planning, operations, & exercises**
  - **Review submissions from the requirements generation processes for technology needs to support the Warfighter**
- **Operationally Manage technologies we sponsor**
- **Participate in limited objective experiments**

# Science & Technology Division (CCJ8-ST)

## AMC FAST LNO

Army Science Advisor  
Dr. Sommer

Division Chief  
Science Advisor  
Marty Drake, DAFC

Deputy Division Chief / XO  
Air Force Fill

Administrative Support  
Navy Fill

Discovery & Integration Branch  
Brett Scharringhausen, DAFC

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Technologies  
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Science & Advanced  
Concepts Branch  
Tom Smith, DAFC

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mos

Transformation & Concept  
Development Branch  
Eric Follstad, DAFC

JCTD OPS Mgrs

18  
mos

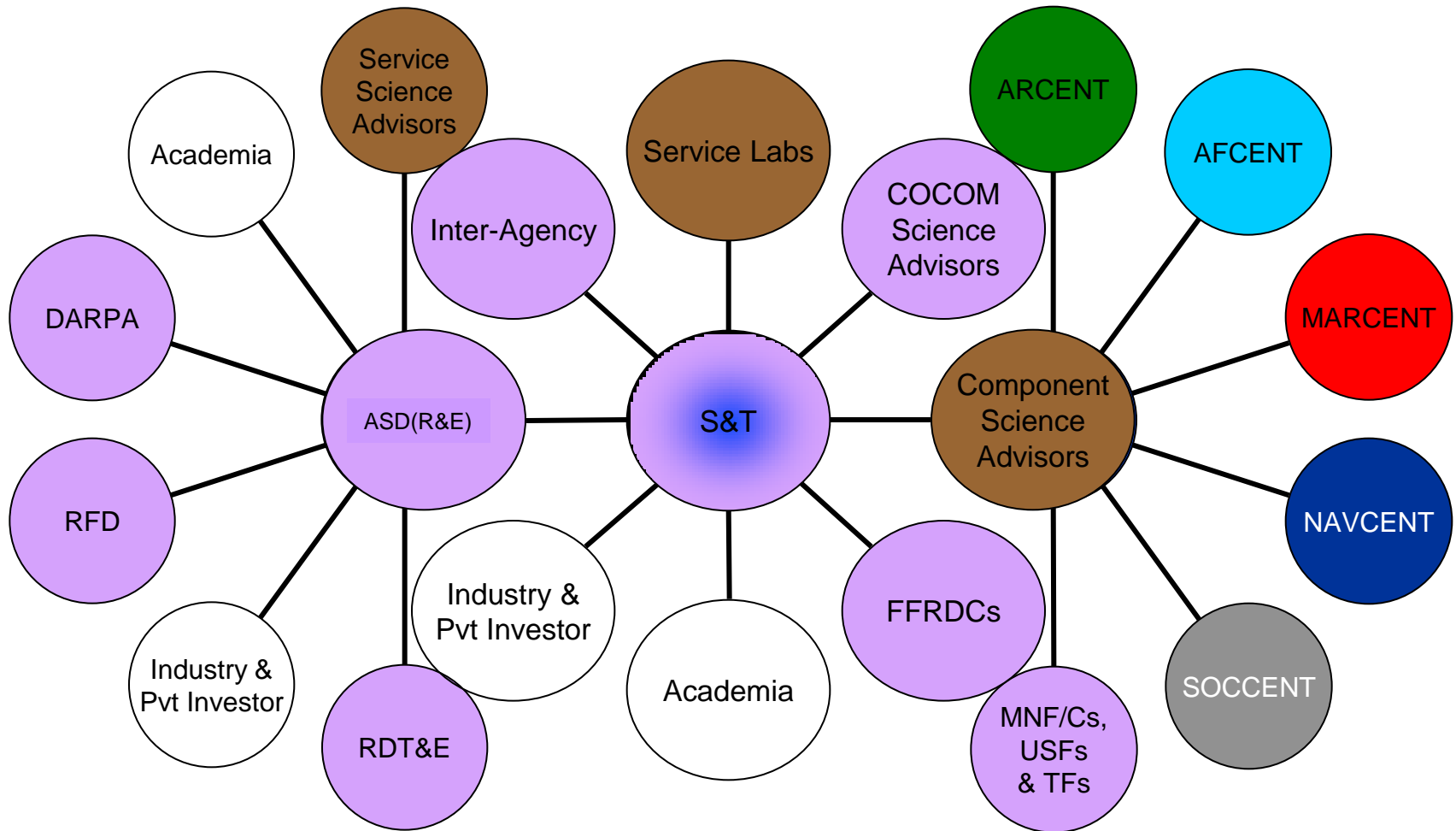
COTS  
GOTS

Joint Test & Experimentation Branch  
Dan Calderala, IPA

The Far Side



# ***How we connect***



# ***U.S. Central Command Tech Focus***

- We focus on the **JOINT** solution that has the potential to satisfy a **JOINT validated** need
- Separate from the many technology needs of our customer(s) those technology challenges which:
  - *Do not have a readily available solution*
  - For high-impact needs there is *insufficient activity pursuing a solution*
- Seek out game-changing technologies which our customer(s) don't know they need

## ***Some technology areas we “pursue”:***

- **Detection of CBRNE at tactically significant distances; with emphasis on a little “e”**
- **Pre-shot counter-sniper, counter-mortar, counter-RPG technologies; with emphasis on automated systems**
- **Technologies which enable the transfer of information more securely, more quickly, to a wider set of users, to include the warfighter when it makes sense, with less bandwidth and dedicated support resources, e.g.:**
  - **Multi-level Security over single architectures**
  - **Bandwidth compression / reduction techniques**
  - **Data to Decision [data=>info=>knowledge=>understanding=>wisdom]**
- **Through automation, remote action, new and novel techniques & technologies which reduce risk and / or stress on the force and / or improve the efficiency and effectiveness of our action(s)**
- **Technologies which allow for greater persistence over the battlespace with fewer platforms; employing improved sensor technology providing greater fidelity of information**

# ***Thematic areas of concern***

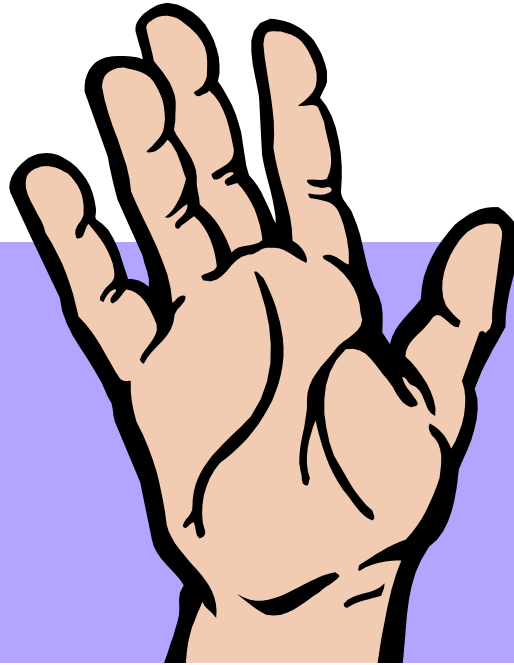
*(not in priority order)*

- **Detect / Defeat:**
  - IED initiators / initiator systems
  - Buried / concealed IEDs
  - Production and assembly of IEDs
- **HME production standoff detection**
- **Culvert access denial / alerting**
- **Persistence in surveillance**
- **Biometrics**
  - Identity dominance
  - Force protection / access
- **Non-lethal vehicle / vessel stop**
- **Reduce stress on the force:**
  - Force Protection requirements
  - Increased automation
- **Anti-swarm lethal / non-lethal**
- **More efficient / effective / timely trng**
- **Predictive analysis techniques**
- **Voice to text technologies**
- **C4ISR systems:**
  - Info sharing between systems
  - Multi-level security
  - Cross domain solutions
  - Faster ... Better sorting / retrieval
  - On the move w/ GIG access to tactical edge
- **Tagging, Tracking, and Locating (TTL)**
- **Lightweight “x” with greater “y”**
- **More power per unit of weight**
- **Scalable effects – non-lethal to lethal**
  - Directed Energy
  - Kinetics
- **True SA for Blue ... Fused Red**
- **Sustaining the force – reduced size, weight, amount, and retrograde**
- **Holding all targets at risk *w/ min risk to US***
- **Any sensor any shooter; Soldier as a sensor; any adversary any battlespace ... anytime**
- ***All things ‘cyber’***

## ***Points of Contact***

- |   |                     |   |
|---|---------------------|---|
| • <b>Marty Drake</b><br><b>Division Chief &amp; Command Science Advisor</b> | <b>813-529-8055</b> | <b><a href="mailto:martin.drake@centcom.mil">martin.drake@centcom.mil</a></b>                     |
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| • <b>Brett Scharringhausen</b><br><b>Discovery &amp; Integration</b>        | <b>813-529-8103</b> | <b><a href="mailto:brett.t.scharringhause@centcom.mil">brett.t.scharringhause@centcom.mil</a></b> |
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Raise your Hand



# ***The Nature of Our VEO Enemy***

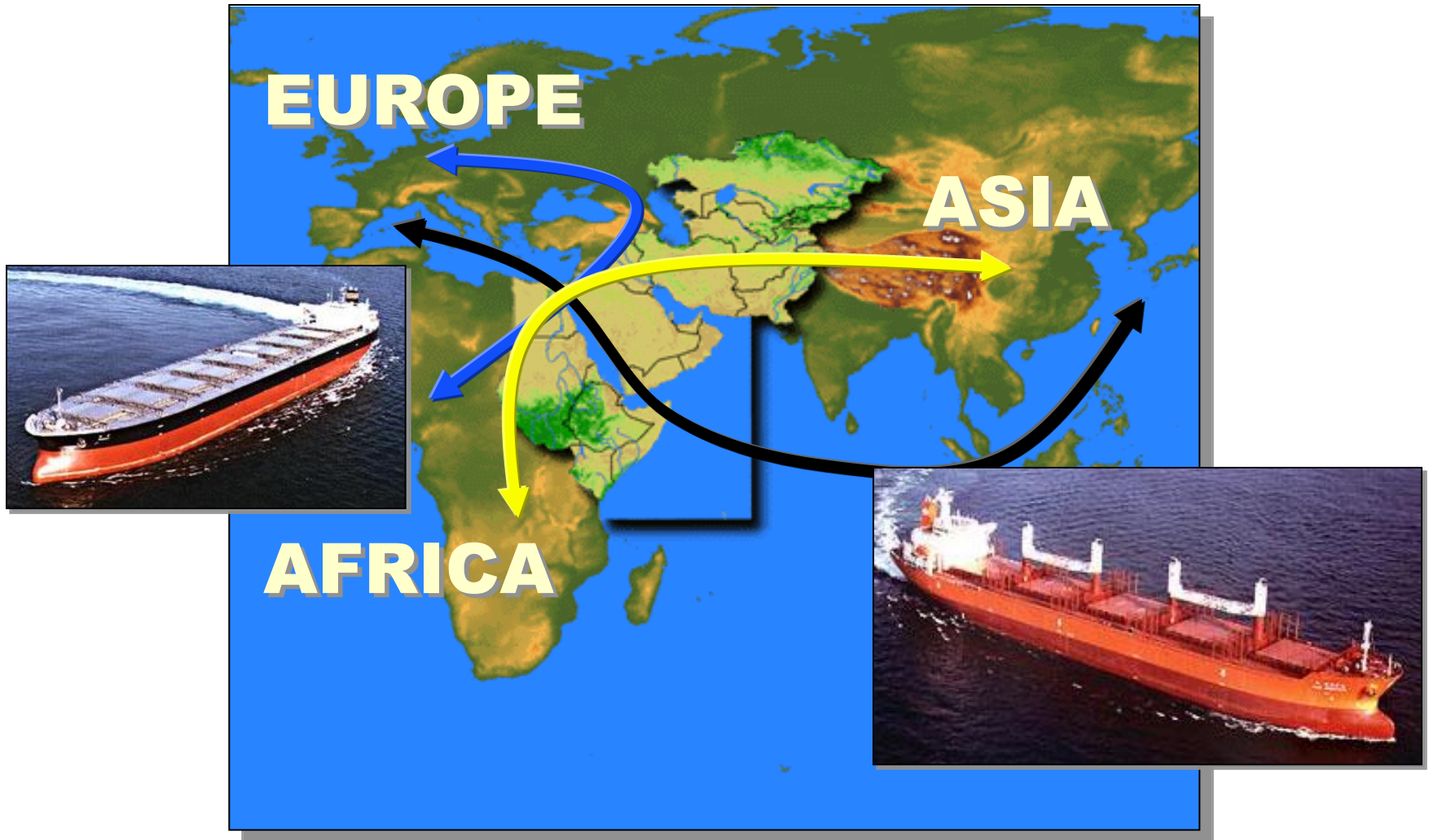
- Guided by ideology; fueled by militant zeal
- Amorphous global network which operates as a web of cells; stateless
- Powerful “Virtual Caliphate” - All directed toward the eventual establishment of a “Physical Caliphate”
- Seek safe-havens, physical footholds for recruitment, training, financing, and propaganda initiatives which complement its virtual element
- Well financed & has a simplified acquisition/training/fielding strategy

## ***Maligned States & Rogue States***

- Similar in many respects to VEOs, but . . .
- Has the capacity to hold us at distance and deny I&W
- Understands ‘the art of war’
- Exploits our political, policy, legal, & capability / capacity seams

# ***Central Region***

## ***Crossroads of Three Continents***



# ***Strategic Interests & Mission***

- **Security of the U.S. citizens & the U.S. Homeland**
- **Regional stability**
- **International access to strategic resources, critical infrastructure, & global markets**
- **Promotion of human rights, rule of law, responsible & effective governance, & broad-based economic growth & opportunity**

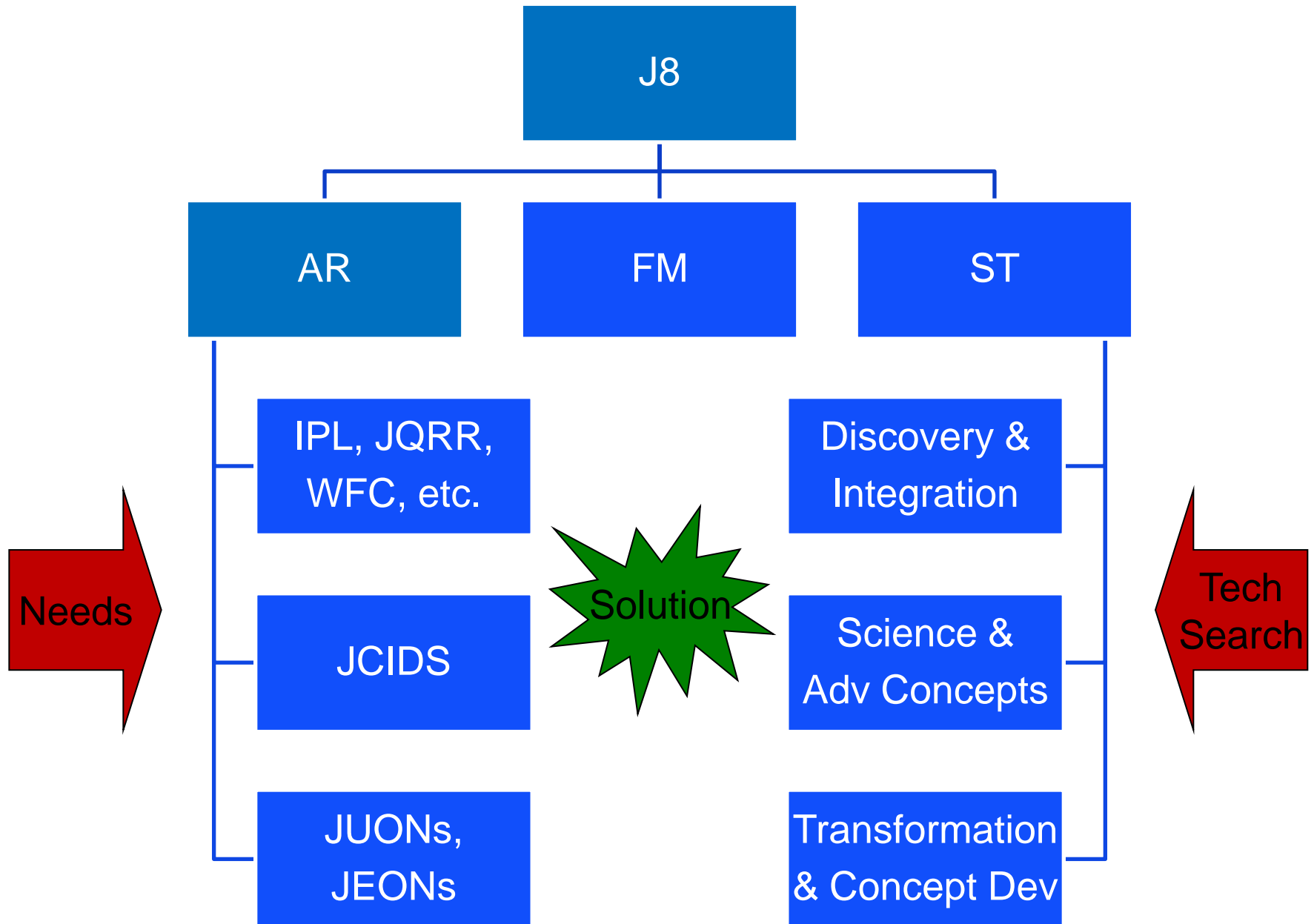
## ***With national & international partners we will:***

- **Promote security & cooperation among nations**
- **Respond to crisis**
- **Deter & defeat state and non-state aggression**
- **Support development & reconstruction to establish conditions for regional security, stability, & prosperity**

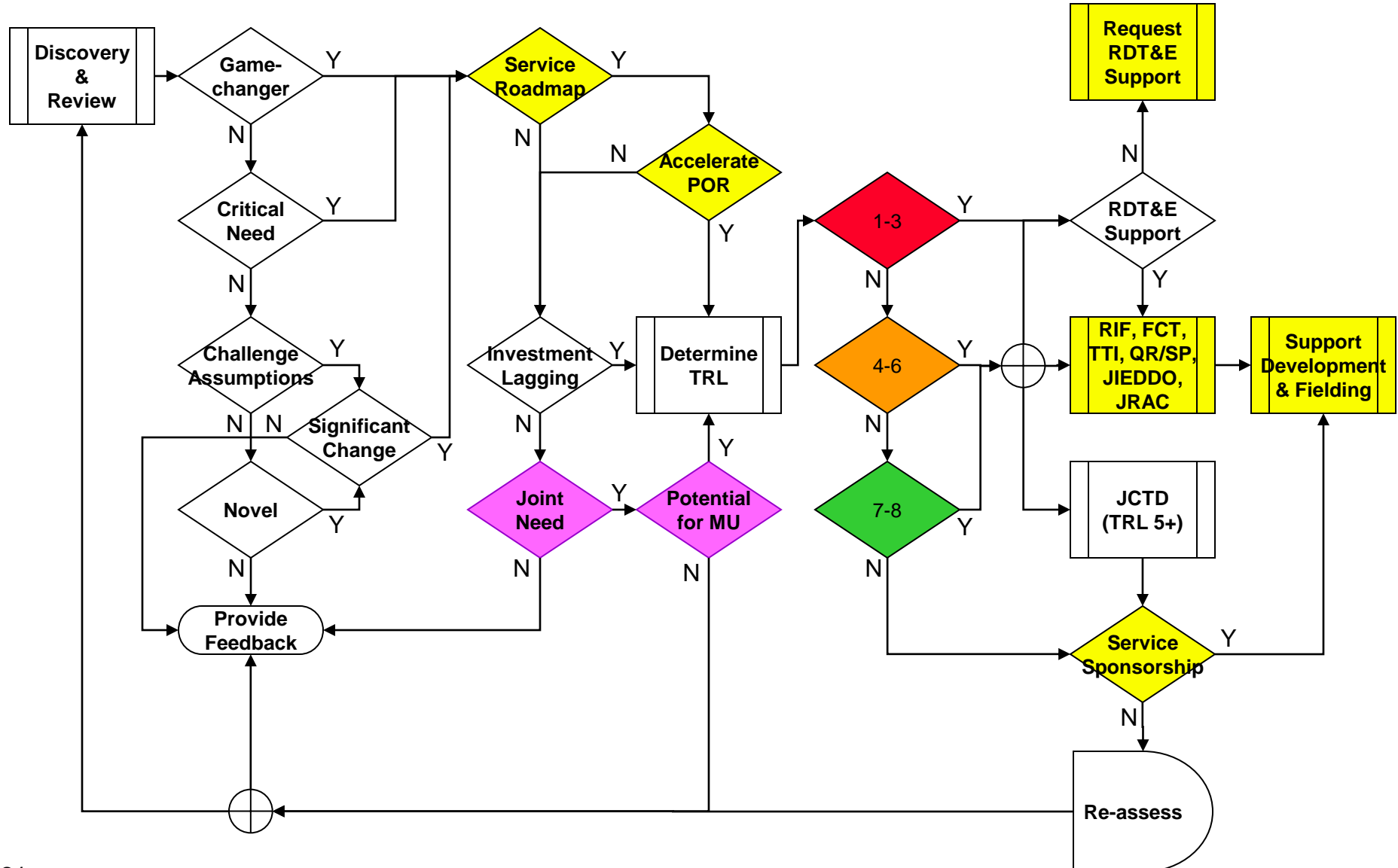


# ***Major Activities***

- **Defeat al-Qaeda & associated movements**
  - **Deny sanctuary & support for violent extremist groups**
  - **Counter proliferation of WMD & associated technologies**
  - **Deter & counter state-based aggression & proxy activities**
  - **Protect freedom of navigation**
  - **Support peaceful resolution to long-standing conflicts**
- 
- ***Develop partner nation capacity***
  - ***Assist nations in their ability to protect their critical infrastructure & support robust infrastructure development***
  - ***Bolster at-risk states***
  - ***Respond to humanitarian crisis***
  - ***Counter arms smuggling***



# Technology Review Process



## Overall Technology Investment Strategy

# ASD(RE)

## Projects

# IPL

S&T Pri

# T-Strat

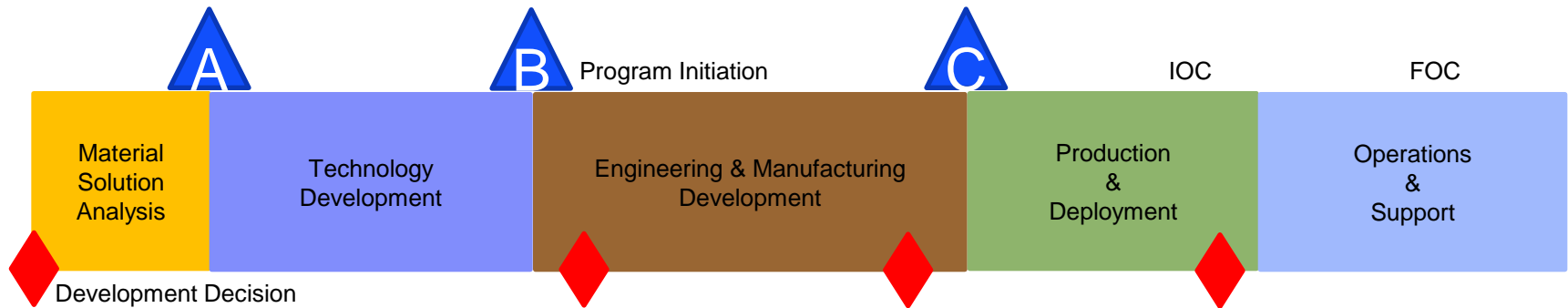
Sponsor  
Monitor  
Proposed

N° of Sensor M = Monitor P = Protected	Counter-Adversary Info Ops Threats Posture Surveillance CA Building Power Capacity Intercept Air & Missile Defense Connect Maritime and Access Area Detail Persistent & Denial Area DSA CIED and H&M Cyber Capabilities CJ/NAJINT										Autonomy Counter-IMD Data-to-Decision Electronic Warfare / Electronic Protect Engineering Facilities Systems Human Systems					Direct Insurgency Efforts Enable Transition to Representative Govt Degrade / Counter Terrorists & VEDs Protect Freedom of Movement Protect Free Flow of Commerce					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Joint Advance Capability Employment (S)	1																			5	
Arghandab Mission Network (S)	1	1	1	1	1	1	1	1	1	1						1	1	1	1	15	
Joint Military Working Dog (S)									1							1	1	1	1	1	
Joint Vehicle Protection & Survivability Sys (S)									1											1	
One Box - One Wire (S) (re-named Black Channel)		1	1	1	1	1	1	1	1	1				1		1	1	1	1	14	
Joint Multi-Effects Weapons System (S)						1	1							1		1	1	1	1	8	
Medusa (S)					1	1	1							1		1	1	1	1	7	
Fixed Wire Advanced Precision Kill Weapon System														1		1	1	1	1	7	
GOEHEDMWN (CIED Root) (S)			1	1	1	1			1					1		1	1	1	1	10	
BD Landing Zone (S)		1								1	1			1						3	
Coalition End-to-End Enhanced Maritime Interdiction Operations Performance Optimization (S)				1	1		1			1			1			1	1	1	1	11	
CISA (23rd Aeronaut) (S)				1					1	1						1	1	1	1	8	
Machine Foreign Language Translation System (S)	1			1						1			1			1	1	1	1	8	
Anti-Swimmer (S)						1										1	1	1	1	5	
Zephyr (S)		1	1		1	1	1	1								1	1	1	1	11	
Combat Dragon II (S)		1		1	1	1	1	1					1			1	1	1	1	12	
Gorgon Stars (S)				1	1	1	1	1		1	1	1				1	1	1	1	13	
Autonomous Mobility Appliance System (P,S)		1								1					1	1	1	1	1	8	
Magix View (P,S)		1	1	1	1	1	1	1							1	1	1	1	1	9	
Expeditionary Waste Water Recycling (P,S)		1	1	1																2	
Tactical Aerial Layer Comms (P,S)		1	1		1	1	1	1							1	1	1	1	1	10	
Multi-Level Secure Handheld (P,S)			1										1			1	1			5	
Gatekeeper on the Move (P,S)								1				1				1	1	1	1	7	
Anti-Admission Tomahawk (P,S)		1			1	1										1	1	1	1	7	
Sweeper (P,S)								1								1	1	1	1	5	
Gryzhlik (P,S)																1	1	1	1	3	
PELTA (P,S)						1		1								1	1	1	1	5	
PSS Tether Testing (P)			1				1	1								1	1	1	1	8	
Tower Hawk (S)		1						1	1							1	1	1	1	8	
Pre-dict Challenge (P)		1	1		1											1	1	1	1	8	
Medix Scrape (P,S or M)		1								1	1	1	1			1	1	1	1	9	
Max Power								1								1	1	1	1	6	
mmW (M)						1	1											1	1	5	
Counter-Mine (M)		1				1				1								1	1	5	
Molecular Power System (M)		1		1																2	
Theranos (M)											1	1			1					3	
Tarentula (M)											1	1				1	1	1	1	5	
Structural Blast Channel Vehicle (M)																1	1	1	1	5	
Secure Tablet (M)			1										1		1					3	
Persistent Ground Surveillance System (M)		1	1		1	1	1	1							1	1	1	1	1	10	
Total	5	15	12	11	12	17	12	20	2	5	7	6	10	3	0	13	31	20	29	32	20

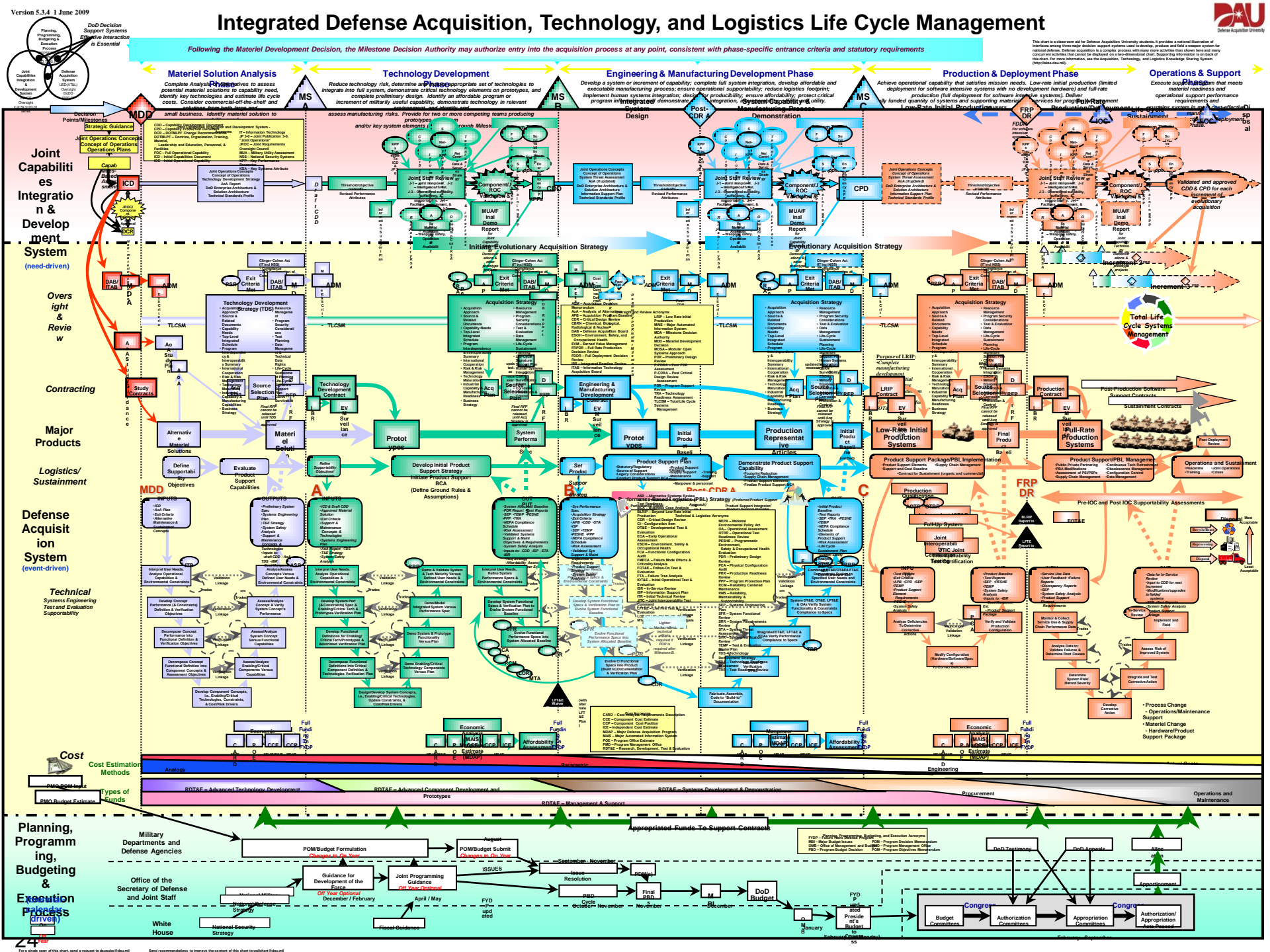
## High Payoff Projects

## Investment Balance

# ***Simplified DoD Acquisition Process***







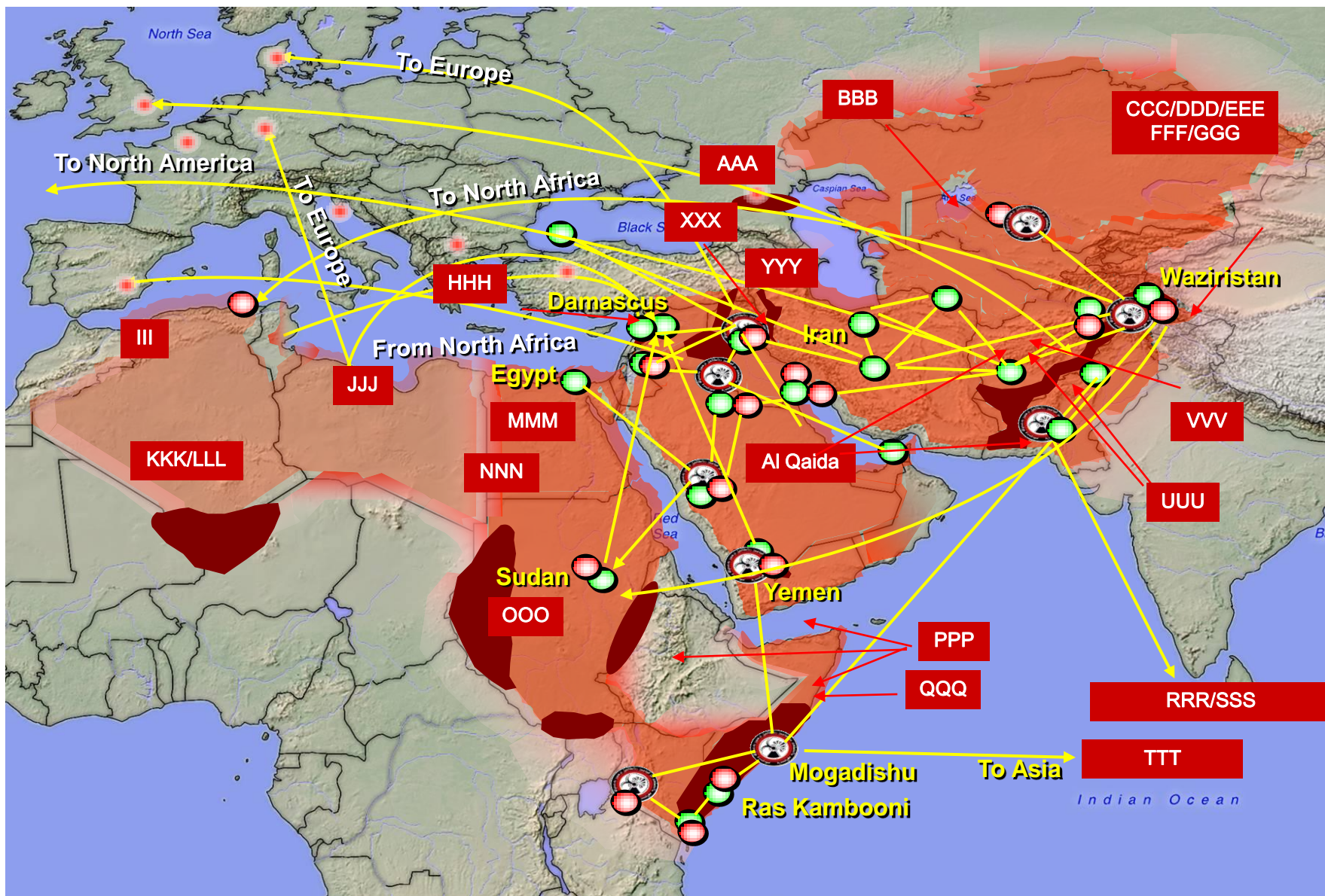
# ***When proposing a solution ... The Heilmeier Questions ... adapted***

- **What are you trying to do?**
  - **Articulate your objectives using absolutely no jargon**
- **Who should care?**
- **How is it accomplished today?**
- **What are the limits of the current practice?**
- **What is new in your approach?**
- **Why do you think you will be successful?**
  - **How do you define / measure success?**
  - **What is your strategy to get there?**
- **How long will it take and at what cost?**
- **What are the risks?**
- **What is your risk reduction / mitigation strategy?**
- **What are the payoffs / return on investment?**

## ***For Technology Developers Some Points to Consider***

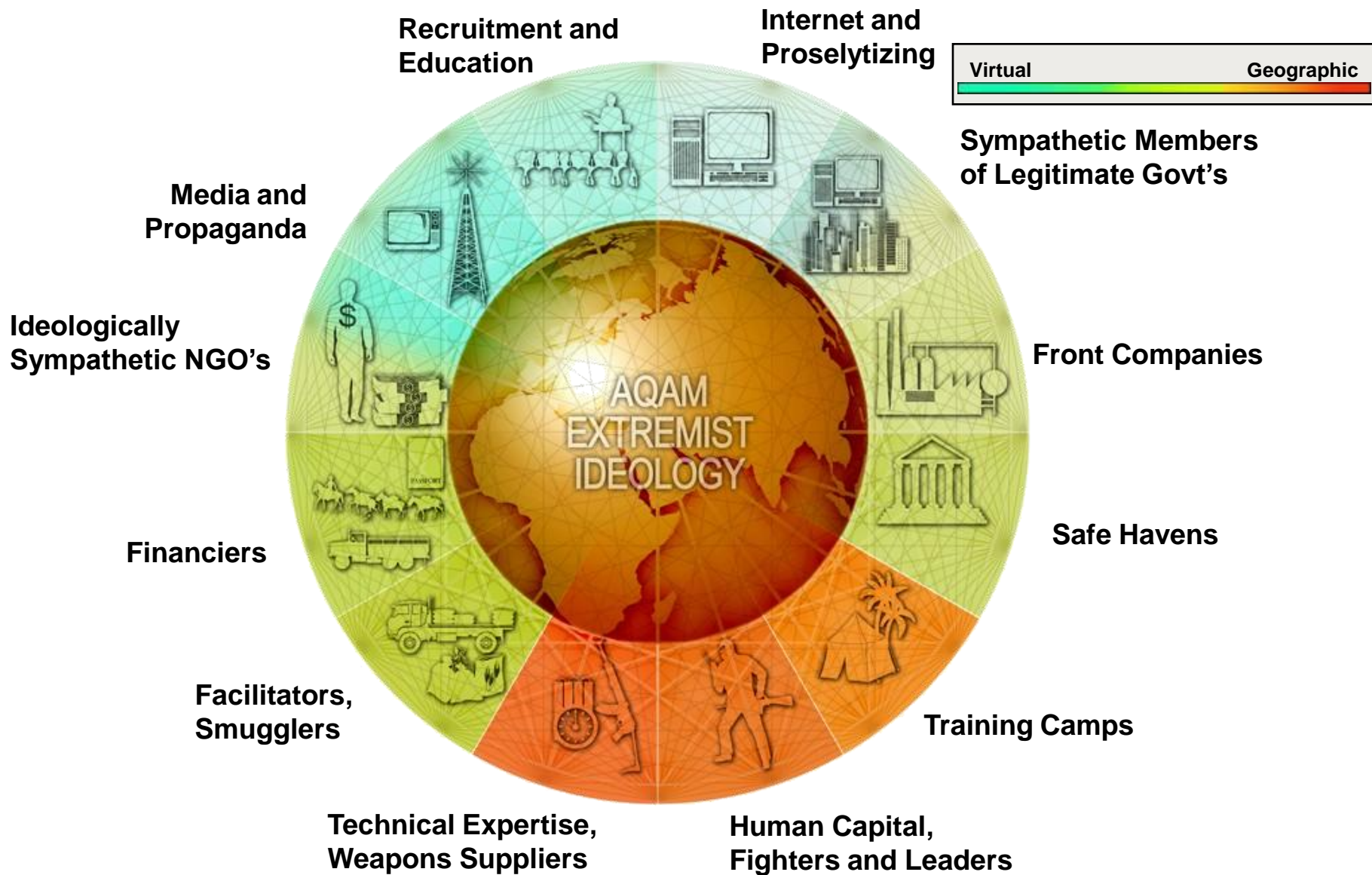
- **Seek to understand how your solution fits in the overall DoD system of systems**
  - **Integrate with legacy systems vice replace them**
  - **Open architectures receive higher interest / support**
- **Consider partnering with others to bring a ‘greater’ solution to the table - system best-of-breed vice at the component level**
- **Determine your impact to a Service program of record**
  - **Training**
  - **Initial fielding**
  - **Sustainment**
- **Substantiate your position with data**
  - **Testing**
  - **Cost-benefit analysis**

# Al Qa'ida and Associated Movements (AQAM)





# ***AQAM: A Threat in All Realms***



# ***It Takes a Network ... To Defeat a Network***

